

Historic American Engineering Record
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Washington Water Power Clark Fork River
Noxon Rapids Hydroelectric Development, Powerhouse HAER No. MT-105-A
~~SESWSW Section 33, T26N R32W &~~ S. bank Clark Fork River
~~NENWNW Section 4, T25N R32W~~ at Noxon Rapids
Noxon, Montana (vicinity) vicinity
Sanders County
Montana

Kristi Hager, Photographer, January 1999

MT-105-A-1. Operating Floor Front (east) Corridor, view to the north. The wall of turbine Unit 1 is visible in left foreground of photograph.

MT-105-A-2. Operating Floor Rear (west) Corridor, view to the south. Note the cooling and service water take-off pipes for Unit 4 visible in left foreground of photograph. The deck plating that covers the oil pipes is also visible in the photograph.

MT-105-A-3. Main Control Switchboard (front), view to the southwest, with item 1 (the synchronization monitor) on the far left of the photograph and item 14 (the Libby transmission line panel) on the far right of the photograph. The operator's desk, with telephone and computer monitors, is also visible in left foreground of the photograph.

MT-105-A-4. Main Control Switchboard (south end rear), view to the north, with item 2 (the load frequency control panel) visible in right foreground, through item 7 (generator Unit 4 control panel) obliquely visible on left side of the photograph. Part of item 1 (the synchronization monitor) is visible behind the phone on right side of photograph.

MT-105-A-5. Main Control Switchboard (north end rear), view to the south, with item 14 (the Libby transmission line panel) visible in left foreground, through item 9 (the Hot Springs No. 2 transmission line panel) obliquely visible on left side of the photograph.

MT-105-A-6. Main Control Switchboard (north end interior), view to the southwest.

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MT-105-A-7. Air Blast Circuit Breaker Compressors, view to the southeast. The air blast circuit breakers are visible in the left background of the photograph.

MT-105-A-8. Generator Barrel and Shaft of Unit 1, view to the northwest, with turbine shaft and thrust bearing visible in upper center of photograph.

MT-105-A-9. Generator Barrel and Rotor of Unit 1, view to the southeast, showing part of the rotor and generator coils along top of photograph and southeast entry stairwell and doors in lower center of photograph.

MT-105-A-10. Turbine Pit of Unit 5, view to the north. Note the difference in configuration within this turbine pit as compared to one of the original pits illustrated in photograph number MT-105-A-11.

MT-105-A-11. Turbine Pit and Shaft of Unit 1, view to the south, with operating ring at base of shaft and servo motor arms in foreground and in left background recess. Turbine monitoring and auxiliary equipment is located in the right background recess.

MT-105-A-12. Turbine Pit Servo Motors of Unit 1, view to the southeast. The servo motors are set into wall recesses and operated by the governors. Note the wicket gate linkages visible in the lower center of the photograph, between the deck plates and the operating ring. Also note the wicket gate linkage grease lines along the wall just below the lights.

MT-105-A-13. Governor Housing of Unit 5, view to the west. Note the analog displays that are soon to be replaced with digital displays.

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MT-105-A-14. Generator Fire Protection for Unit 5 (low pressure), view to the southeast.

MT-105-A-15. Governor Housing for Units 3 and 4, view to the west. The governor controls the servo motors and operating ring visible in photographs MT-105-A-11 and MT-105-A-12 above. The analog displays on the housing are scheduled to be replaced with digital displays.

MT-105-A-16. Governor Accumulator Tanks for Units 3 and 4 and Grounding Transformer for Unit 4, view to the east. The back of the governor housing is visible in center of photograph, between the accumulator tanks. The grounding transformer for Unit 4 is located on left side of photograph, behind wire mesh safety cage.

MT-105-A-17. Governor Accumulator Tank Compressor and motor located along rear corridor between Units 3 and 4, view to the west. The compressor motor is located just right of center in photograph. The pressure tank on the right side of the photograph is a reserve pressure tank for governor system. The pressure tank on the left side of the photograph is the original instrument air pressure tank.

MT-105-A-18. Station Service Control and Motor Control Center #2, view to the northeast. Note the circuit breaker switch on cart in left corner of photograph. This switch is part of the motor control center which has been temporarily removed from the slot marked with a tag that is visible at lower left end of control center.

MT-105-A-19. Heat Pump, view to the southwest. This system provides ventilation air heating and cooling throughout the powerhouse.

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MT-105-A-20. Station Unwatering Pumps and Sump Pump, view to the north. The station unwatering pumps are the two large units in the center and right foreground of photograph and are marked with the numbers 1 and 2. The sump pump is the smaller unit in left foreground of photograph. These pumps are used for unwatering the draft chests for maintenance. Note the draft tube unwatering valve visible in background between the two unwatering pumps.

MT-105-A-21. Greasing System for Unit 1, view to the northeast. This unit provides lubricating grease for all of the pins and bushings in the turbine pit through the grease lines visible in photograph MT-105-A-12 above.

MT-105-A-22. Blow Down Valve for Unit 1, view to the southwest. This valve allows the water in the draft chest to be lowered (i.e., "blown down") so that the unit can be motored (i.e., run like an electric motor rather than an electric power generator). The valve is operated by pressure from the instrument air system (part of which is visible in photograph MT-105-A-17 above), but the unit draws on the station air system (see photograph MT-105-A-24 below) to lower the water in the draft chest.

MT-105-A-23. Station Compressor Room 1 with Air Compressors and Accumulator Tanks, view to the south. One of the two large station air compressor units used for depressing the draft tube water level is visible atop a concrete pedestal on the left side of photograph (the second identical compressor is located in an adjacent room). Two of the six station air accumulator tanks are visible in the background. The smaller station service air compressor is visible in right foreground of the photograph was installed in the early 1980s, and replaced the original station service air compressor.

MT-105-A-24. Station Oil Tanks, view to the south. The four oil storage tanks located along the east wall (left side of photograph) are, from foreground to background: dirty transformer oil tank, clean transformer oil tank, dirty lubricating oil tank, and clean lubricating oil tank. An oil filter system is also visible in background along the far wall.

MT-105-A-25. Station Control Batteries and Chargers, view to the east. The ARU130HK50 battery charger is visible in left foreground of photograph, with

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the A-40 backup battery charger visible adjacent to and beyond the ARU130HK50. The racks of 60 KCU-7 lead calcium batteries manufactured by C&D Batteries are visible in the center of the photograph.

MT-105-A-26. Generator Voltage Regulator Cabinet Exterior for Unit 1, view to the northwest. The exciter supplies DC current to the generator rotor to create electricity. Each of the four original units has an exciter identical to this one, and all are scheduled for replacement.

MT-105-A-27. Generator Voltage Regulator Cabinet Interior for Unit 1, view to the northwest